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CRUISE REPORTF.R.S. "SCOTIA"September, 1954.Objectives

- (1) To make a herring larvae survey.
- (2) To investigate the operational dimensions of the Swedish bottom herring trawl.
- (3) To test the Swedish herring trawl and the Icelandic trawl in the Fladen area.

General

The vessel left Aberdeen early on 4th September to carry out the herring larvae survey. By working on the west side of the Orkneys and inside the Moray Firth during spells when the weather elsewhere was bad the survey was completed with only a four hour break in Dunnet Bay. One station had to be omitted because of Naval exercises in the Moray Firth. "Scotia" returned to Aberdeen on the 12th to collect trawl gear and to land Mr. Corrigall. The following night the vessel moved out to Aberdeen Bay for gear testing experiments. Mr. Corrigall rejoined the ship from the pilot boat on the night of the 14th. The replacement of damaged items of trawling gear necessitated a return to port overnight on the 16th.

On the 18th the vessel proceeded to the Gut, the area from which most herring had been landed in Aberdeen the previous week. Trawling was carried out on the grounds there as well as on the west side of the Swathway and the south end of the Fladen Ground. A gale on the night of the 23rd forced us to run for shelter in the Moray Firth and return to Aberdeen on the 25th.

Plankton

Collections were generally rich, being composed mainly of Calanus, except in the area to the East of 1°W and North of 58° where Ceratium macroceros was prevalent. Small quantities of Pleurobrachia and Sagitta were present in most samples and Beroe was noted in hauls from the statistical areas B18a and C18a.

Herring larvae did not appear to be so numerous as expected and the older group was more widely scattered than usual. The greatest concentrations were in the central Moray Firth and the Fair Isle passage. The yolk-sac stage was observed in samples to the west end of the Pentland Firth, to the east of Orkney and the Turbot Bank area.

Herring

Although there were some good hauls of white fish, catches of herring were never heavy. Of the 231 herring tagged, one has since been recaptured.

Echosounding

The MS24J (Kingfisher) machine was used during the herring trawling period. Annotated sketches of the appearance of echoes on the cathode ray tube were made on the recording paper. Where possible, these were cross referenced with the MS24G trace. The traces have been returned to the laboratory for examination. The CRT shows clearly the vertical diurnal migration of the fish stock or part of it near the bottom. The CRT shows what are presumed to be fish traces tight on the bottom, when these would not be evident on the graphical record.

Trawling

During the gear testing experiments in Aberdeen Bay it was established that the Icelandic Trawl when used as a bottom trawl had a gape better than that of an ordinary trawl, but not as large as when the rig is used pelagically. Since headline height depends on the upward pull of the headline wires rather than on flotation, it is apparent and has been shown in practice, that the paying out of extra warp after the boards have touched bottom decreases the headline height. The gear still takes us about twice as long to shoot and haul as the ordinary trawl gear. Amongst white fish in Aberdeen Bay it was established that the rig could work quite effectively as a bottom trawl. The rig did not have a fair trial on the herring trawling grounds since bad weather forced us to clear out of the area before more than two hauls could be made with it.

Gear testing with the Swedish herring trawl showed it to have a headline height of about 11 feet. The figure was determined by the depth recorders on headline and groundrope. A simple, though not highly accurate method of determining headline height, was evolved on the herring grounds. A 6 feet length of chain was hung over the side of the vessel on the end of a 10 feet length of twine. With the chain and some of the twine in the water the angle of the twine to the vertical was noted at trawling speed. The twine was then attached to the centre of the headline and at the end of the haul the length of chain which had been scratched on the bottom was measured. Angles and lengths give the headline height. The figures so obtained agree quite well with those obtained by the depth recorders. The method has the virtue of being one that any fisherman with a piece of chain, twine, pencil, paper and a ruler can apply.

The headline height is quite good since only normal flotation and no patent floats were used. The Swedish vessels use much smaller doors with this net than those used by "Scotia". It is to be presumed therefore that the trawl as normally used has a greater headline height than we obtained. On the herring trawling grounds several good hauls of white fish were obtained but no large quantities of herring were taken.

For most of the time on the grounds the weather was either too bad or only just good enough to allow fishing from "Scotia".

W. DICKSON

5th November, 1954.

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